REMARKS

Claims 1-23 are all the claims pending in the application. Applicants gratefully acknowledge the Examiner's indication by telephone conference that dependent Claim 23 appears allowable if rewritten in independent form as no references have been cited rejecting this claim. Nonetheless, Applicants elect not to rewrite allowable Claim 23 in independent form at this time. Accordingly, Claims 1-22 stand rejected on prior art grounds. Applicants respectfully traverse the prior art rejections based on the following discussion.

I. The Objections and the 35 U.S.C. Section 112, Second Paragraph Rejection

First, Applicant, as indicated above, has amended claim 11 consistent with the Examiner's comments.

Second, as indicated to the Examiner by telephone conference, Applicant respectfully traverses the objection that claim 2 does not recite proper Markush Group Language. Indeed, the specification explicitly indicates that the moiety may include combinations, that is, more than one derivative thus not necessitating the use of the closed Markush Group Language. Please note, support for the language of claim 2 can be found in several places including, such as, Training Materials For Examining Patent Applications with Respect to 35 U.S.C. 112 –Enablement Chemical/Biotechnical Applications, released August 1996. (See Application, Page 8, lines 5-10).

Third, regarding the 35 U.S.C. 112, second paragraph rejection, Applicant respectfully traverses the rejection regarding claim 23. To one of ordinary skill in the art, oxidation of the Al_2O_3 type is classical oxidation where electrons are transferred between the Al and the Oxygen atoms. In contrast, as cited in claim 23, the covalent aluminum-oxygen bond is the textbook covalent bond where electrons are shared by two atomic nuclei, that is, the aluminum nuclei and the oxygen nuclei. Therefore, Applicant's protected aluminum mass of claim 1, and related claim 23, can include a covalent aluminum-oxygen bond while still indicating that a bare aluminum mass includes an Al surface absent Al_2O_3. (See Application, Page 2, lines 6-8; Page 3, line 16- page 4, line 10; Page 6, lines 1-5; Page 8, lines 5-8; and Page 10, lines 7-9; Page 11, lines 6-10; Page 12, lines 5-15; Page 13, lines 9-14; and Figure 2; See also, Richard J. Lewis, Sr., Hawley's Condensed Chemical Dictionary, Pages 24 and 153, (14th Edition, 2001).

In view of the foregoing, the Examiner is respectfully requested to withdraw these objections and rejections.

II. The Prior Art Rejections

Claims 1, 2, 4-6, 8-9, 13-18 and 21-22 are rejected under 35 U.S.C. Section 103(a) as being unpatentable over Akao, et al. ("Akao")(U.S. Patent No. 5,827,584). Claims 3, 7. 10-12 and 16-17 are rejected under 35 U.S.C. Section 103(a) as being unpatentable over Akao in view of Brizzolara, et al. ("Brizzolara")(U.S. Patent No. 6,259,092).

A. The Rejection Based on Akao

Regarding claim 1, Akao fails to disclose, teach or suggest the features of independent claim 1, and related dependent claims 2, 6, 8 and 15, and similarly independent claim 18, and related dependent claim 20, including the surface is an Al surface absent Al_2O_3 where the Al surface is covalently

bonded to the attached layer. (See Application, Page 2, lines 6-8; Page 3, line 16- Page 4, line 10; Page 8, lines 5-8; and Page 10, lines 7-9; Page 11, lines 6-10; Page 13, lines 9-14; and Figure 2).

Indeed, as previously discussed in the Amendment of October 6, 2005, Figures 1-11 of Akao merely teach a conventional injection molded article for photographic photosensitive material, and a related molding method, for use in a photographic spool or a film unit with a lens. The injected molded article is formed from a non-crystalline resin composition including a non-crystalline resin, a rubbery material, a thermoplastic elastomer, an ethylene copolymer resin, a light-shielding material and other materials. The materials of the resin are processed and reacted to form the molded article.

In particular, in an embodiment, an organic phosphoric ester contained in the non-crystalline resin composition is a surface treating agent adsorbed to the metal surface of an injection molding machine or to the surface of a metal powder, such as, aluminum powder, to give a surface protection effect. Further, as indicated, the adsorbed organic phosphoric ester provides an oxidation inhibitory effect of the metal surface. However, a titanate or silane coupling agent needs to be combined with the phosphoric ester to provide this effect. Nonetheless, and for emphasis, the adsorbed ester only provides an inhibitory effect but does not prevent oxidation.

Certainly, to one of ordinary skill in the art, adsorption is basically defined as adherence of atoms or molecules of liquid or gas to the surface of another substance where the attractive force of adsorption is relatively small in the order of van der Waals forces. In contrast, as discussed below, Applicant teaches a surface absent $Al_2O_3$where the surface is covalently bonded to the attached layer. To one of ordinary skill in the art, adsorption forces in the order of magnitude as van der Waals forces is structurally and energetically different than a covalent bond. Accordingly, the Akao injected molded article is structurally distinct from Applicant's claimed invention. Thus, Akao does not disclose, teach or suggest, including the surface is an Al surface absent Al_2O_3 where the Al surface is

covalently bonded to the attached layer. (See Office Action, Page 3, lines 3-14; Akao, Column 3, lines 10-28; Column 34, line 62-Column 35, 10; Column 36, line 21-31; Column 37, lines 7-40; Column 38, lines 26-38; See also, Richard J. Lewis, Sr., Hawley's Condensed Chemical Dictionary, Pages 24 and 153, (14th Edition, 2001):).

In contrast, as indicated briefly above and in the previous amendment of October 6, 2005, Applicant's invention is a passivation layer on an aluminum surface to form a protected aluminum mass used, for example, to improve the effectiveness of energetic materials. The invention includes a bare aluminum mass 12 with an attached layer 14 to a surface of the bare aluminum mass 12. In particular, the bare aluminum mass 12 is formed as an unprotected aluminum mass where the attached layer 14 acts as a protective layer to prevent oxidation of the surface of the bare aluminum mass 12. The attached layer is bonded in an inert atmosphere, such as, argon, to the attached layer 14. Thus, the attached layer 14 covalently bonds to the aluminum (Al) surface of the bare aluminum mass 12 where the Al surface is absent Al_2O_3. Indeed, the spectra of the Al/SAM confirms that "the distinguishing peak of Al_2O_3 coated aluminum at approximately 950 cm^{-1}" is absent. (See Application, Page 2, lines 6-8; Page 3, line 16- page 4, line 10; Page 6, lines 1-5; Page 8, lines 5-8; and Page 10, lines 7-9; Page 11, lines 6-10; Page 12, lines 5-15; Page 13, lines 9-14; and Figure 2).

Please note, as indicated above, Applicant teaches that a covalent bond is formed between the attached layer 14 and the aluminum surface of the bare aluminum mass 12, which involves the sharing of electrons between two atomic nuclei, whereas Akao teaches adsorption of the phosphoric ester compound to the metal surface of the injection molding machine where the attractive force of adsorption is relatively small in the order of van der Waals forces, and thus is not a covalent bond. Further, Applicant teaches that the invention is produced in an inert atmosphere thus preventing the formation of Al_2O_3, whereas Akao clearly seems to suggest that the Akao process is performed in an

oxygen environment not an inert environment. Accordingly, the criticality of Applicant's invention is that the energy obtained during combustion of the aluminum, for example, in an energetic material system, is maximized without the presence of an oxide layer. Thus, the surface of the bare aluminum mass 12 is a surface absent Al_2O_3 unlike the Akao structure, and related method. (See Application, Page 1, line 15-Page 2, line 8; and Page 4, lines 1-6).

Therefore, Applicant's invention is a distinct structure, and related method, compared to the conventional Akao structure. For at least the reasons outlined above, Applicant respectfully submits that Akao, alone or in combination, does not disclose, teach or suggest including the surface is an Al surface absent Al_2O_3 where the Al surface is covalently bonded to the attached layer as recited in independent claims 1 and 18. (See above).

For the reasons stated above, the claimed invention, and the invention as cited in independent claim 1, and related dependent claims 2, 4-6, 8, 9, 13-17, 21 and 22, and similarly independent claim 18, and related dependent claim 20, are fully patentable over the cited reference.

B. The Rejection Based on Akao in view of Brizzolara

Regarding independent claim 1, and related dependent claims 3, 7, 10-12 and 16-17, first the references, separately, or in combination, fail to disclose, teach or suggest a reason or motivation for being combined, as previously indicated in the Amendment of October 6, 2005.

In particular, Akao, as previously indicated, pertains to a conventional injection molded article for photographic photosensitive material, and a related molding method, for use in a photographic spool or a film unit with a lens. (See Akao at Abstract; and Column 1, lines 5-35).

By contrast, Brizzolara pertains to a method of determining a thickness of a carbonaceous overlayer(s) on substrates of different material for calculating the thickness of a thin material overlayer

on a solid surface, which takes into account the substrate effect of photoelectrons from an underlying substrate, and thus does not have the same aim as Akao. (See Brizzolara at Abstract; and Column 1, lines 4-14).

Nothing within Brizzolara, which relates to a thickness calculating method, suggests a conventional injection molded photographic article as disclosed in Akao.

Therefore, one of ordinary skill in the art would not have combined these references absent hindsight.

Second, even assuming that the references would have been combined, Akao, as indicated above, does not disclose, teach or suggest the features of independent claim 1, including the surface is an Al surface absent Al_2O_3 where the Al surface is covalently bonded to the attached layer. (See above).

Further, regarding claims 3, 7, 10-12 and 16-17, Applicant agrees with the Office Action that Akao also does not disclose, teach or suggest treating aluminum particle with a carboxylic acid to form a protective layer. Applicant further agrees with the Office Action that neither Akao nor Brizzolara teach that the carboxylic acid is a perfluoroalkyl acid with the claimed formulas. Applicant also agrees with the Office Action that Akao does not teach or suggest that the attached layer is an energetic moiety or that the protected mass of aluminum is an energetic material. Applicant specifically traverses the assertion that it would be obvious to one of ordinary skill in the art to recognize that carboxylic fatty acids could be employed as a protective monolayer material on the aluminum mass of Akao, particularly where Akao does not teach the formation of a covalent bond between the phosphoric ester and the metal surface. The assertion in the Office Action is clearly not obvious, and the MPEP explicitly requires that such a teaching or suggestion be provided and

identified, which the Office Action does not provide. (See Office Action, Page 5, Third Paragraph - Page 7, Third Paragraph).

Brizzolara is also deficient.

Instead, Figures 1-4 of Brizzolara merely disclose a method for determining a thickness of carbonaceous overlayers on substrates of differing material. The method includes effectuating x-ray photoelectron spectroscopy with respect to an overlayer by measuring the intensity of an Auger electron emission peak with respect to an element in the overlayer, and measuring the intensity of a non-Auger electron emission peak with respect to the element, and evaluating the ratio of the measured intensity of the Auger electron emission peak to the measured intensity of the non-Auger electron emission peak. In particular, this method is simply focused on calculating a number for determining a thickness, whereas Applicant's claimed invention is focus on forming a structure, which includes a bare aluminum mass with an Al surface absent Al_2O_3.

Indeed, Brizzolara suggests teaching the opposite, for example, copper and aluminum substrates were permitted to form air stable oxides by exposure to ambient for 30 minutes prior to immersion in the self-assembly solution. Unlike Applicant's invention, Brizzolara seems to suggest that the preparation of the monolayer on copper, silver or aluminum occurs in an environment where oxygen is present not an inert gas environment. Accordingly, Brizzolara discloses oxide formation. Thus, Brizzolara suggests oxidation formation on a surface, whereas Applicant's claimed invention includes a bare aluminum mass with an Al surface absent Al_2O_3. Therefore, Brizzolara does not disclose or suggest, including a surface is an Al surface absent Al_2O_3 where the Al surface is covalently bonded to the attached layer. (See Brizzolara, Column 9, line 65-Column 10, line 25; Column 13, lines 31-45; Column 17, lines 42-68; Column 19, line 59-Column 20, line 51; and Figures 1-4).

For at least the reasons outlined above, Applicant respectfully submits that neither Akao nor Brizzolara, alone or in combination, disclose, teach or suggest including the surface is an Al surface absent Al_2O_3 where the Al surface is covalently bonded to the attached layer as recited in independent claim 1 of Applicant's invention.

For the reasons stated above, the claimed invention, and the invention as cited in independent claim 1, and related dependent claims 3, 7, 10-12 and 16-17, is fully patentable over the cited references.

III. Formal Matters and Conclusions

In view of the foregoing, Applicants submit that claims 1-23, all the claims presently pending in the application, are patentably distinct from the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above application to issue at the earliest possible time.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary.

Please charge any deficiencies and credit any overpayment to Attorney's Deposit Account Number 50-1114.

Respectfully submitted,

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